TRAVAUX DU MUSÉUM NATIONAL D'HISTOIRE NATURELLE «GRIGORE ANTIPA»

THE JOURNAL OF "GRIGORE ANTIPA" NATIONAL MUSEUM OF NATURAL HISTORY

Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa" 64 (1): 95–100 (2021)
doi: 10.3897/travaux.64.e70022

FAUNISTIC NOTE

New data on the distribution of the threatened Scarce fritillary, *Euphydryas maturna* (Lepidoptera: Nymphalidae), in southern Romania

Mihai Stănescu[1], Tibor-Csaba Vizauer[2], Elena Iulia Iorgu[1], Ionuț Ștefan Iorgu[1]

1 *"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd., 011341 Bucharest, Romania*
2 *Department of Taxonomy and Ecology, Babeș-Bolyai University, 5–7 Clinicilor Street, 400006 Cluj-Napoca, Romania*

Corresponding author: *Mihai Stănescu* (mihaist@antipa.ro)

Received 11 June 2021 | Accepted 25 June 2021 | Published 30 June 2021

Citation: Stănescu M, Vizauer T-C, Iorgu EI, Iorgu IȘ (2021) New data on the distribution of the threatened Scarce fritillary, *Euphydryas maturna* (Lepidoptera: Nymphalidae), in southern Romania. Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa" 64(1): 95–100. https://doi.org/10.3897/travaux.64.e70022

Abstract

Euphydryas maturna is a highly endangered species listed on the Annexes II and IV of the Habitats Directive as well as on the Annex II of the Bern Convention. Despite being reported from almost all the historical regions of Romania, there are only two published records from Oltenia so far. Several specimens spotted in the Bungețu forest (near Bălcești, Vâlcea county) in late May 2021, are filling this gap in the known distribution of the Scarce fritillary in Romania.

Keywords

Protected species, faunistic note, new record, distribution.

The Scarce fritillary, *Euphydryas maturna* (Linnaeus, 1758), is a butterfly largely distributed in the Palaearctic region, from western Europe eastwards to Mongolia, north-western China (Xinjiang Province) and Russian Far East (Khabarovskiy Krai) (Streltzov 2016). However, despite still being present in eastern France (it flies in the eastern regions, westward to Loiret and Cher, but no longer seen in Île-de-France – Leraut 2016), there are only very few populations left in the western part of its distribution area, since it has declined all over Europe, except for north-western part where there are still large and stable populations (van Swaay and Warren 1999). It

Copyright *Stănescu, Vizauer, Iorgu & Iorgu*. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

has disappeared from Belgium and Luxemburg and has decreased rapidly in Central Europe, with only one population left in the Czech Republic (Konvička et al. 2005) and a similar situation in adjacent countries (Kudrna 2019). This is a reason why *E. maturna* is regarded as highly endangered in most of Europe (van Swaay and Warren 1999, 2006; Wahlberg 2001; van Swaay et al. 2010; Kudrna 2019; Maes et al. 2020). This butterfly is listed in the Annexes II and IV of the Habitats Directive of the European Union, as data-deficient species in the IUCN Red List of Threatened Species (van Swaay et al. 2010; Kudrna 2019), and as vulnerable on a continental scale (van Swaay et al. 2010). In Romania, the Scarce fritillary is listed as vulnerable at a national scale (Rákosy 2002; Rákosy et al. 2003; Székely 2008). Throughout the rest of its range, Scarce fritillary appears very limited in locally restricted areas.

Following early records from Săcărâmb (Franzenau 1852) and northern Dobrogea (Mann 1866), the known distribution of the Scarce fritillary in Romania gradually extended to cover almost all the regions of the country (Rákosy et al. 2003; Székely 2008; Mihăilescu et al. 2015). Also, during the effort to discover as many of the populations present on the Romanian territory, it was revealed that the relatively isolated ones from Dobrogea belong to a distinct subspecies, *E. maturna opulenta* (Rákosy et al. 2012). Nevertheless, the distribution of the Scarce fritillary in Romania is still insufficiently known. In Oltenia, for instance, the Scarce fritillary was first mentioned by Fleck (1900) from Drobeta-Turnu Severin, at the westernmost border of the region, following Josef Haberhauer's observations. This report is retaken later on by Salay (1910), and not confirmed afterwards. At the beginning of the 21st century, another mention of this species from Oltenia region (Rákosy et al. 2003) was published. This time, the record was based not only on Fleck's mention, but also on several specimens spotted before 1980 at Păușa (Vâlcea county), on the left bank of Olt river, hence outside the generally recognized and accepted limits of the Oltenia region (L. Rákosy, pers. com.). It was assumed that this butterfly might also find suitable habitats on the right bank of the river Olt and beyond. Having this in mind, we hardly found an accurate mention of the Scarce fritillary from Oltenia in the last century. This gap in the known distribution of the Scarce fritillary in Romania is also noticed by both Székely (2008) and Rákosy (2013).

Following a rather unsteady, cold and rainy spring, at the end of May 2021 the weather improved substantially and conditions were met for resuming the field work. Taking advantage of these conditions, the last two authors succeeded in finding a suitable habitat for the Scarce fritillary in the Bungețu Forest, not far away from the town of Bălcești, Vâlcea county (Fig. 1). It was in the midday of May 29th, 2021, when they managed to spot 2 males (Fig. 2) and 3 females of Scarce fritillary flying along a forest trail (44.5881°N 23.9227°E). This is only about two dozen kilometres from the ROSCI0168 Pădurea Șarului Natura2000 site, in whose data form the Scarce fritillary is also mentioned, yet without specifying the data source. Putting side by side these two pieces of information, it is reasonable to believe that a stable population of Scarce fritillary survives in the forests of this region.

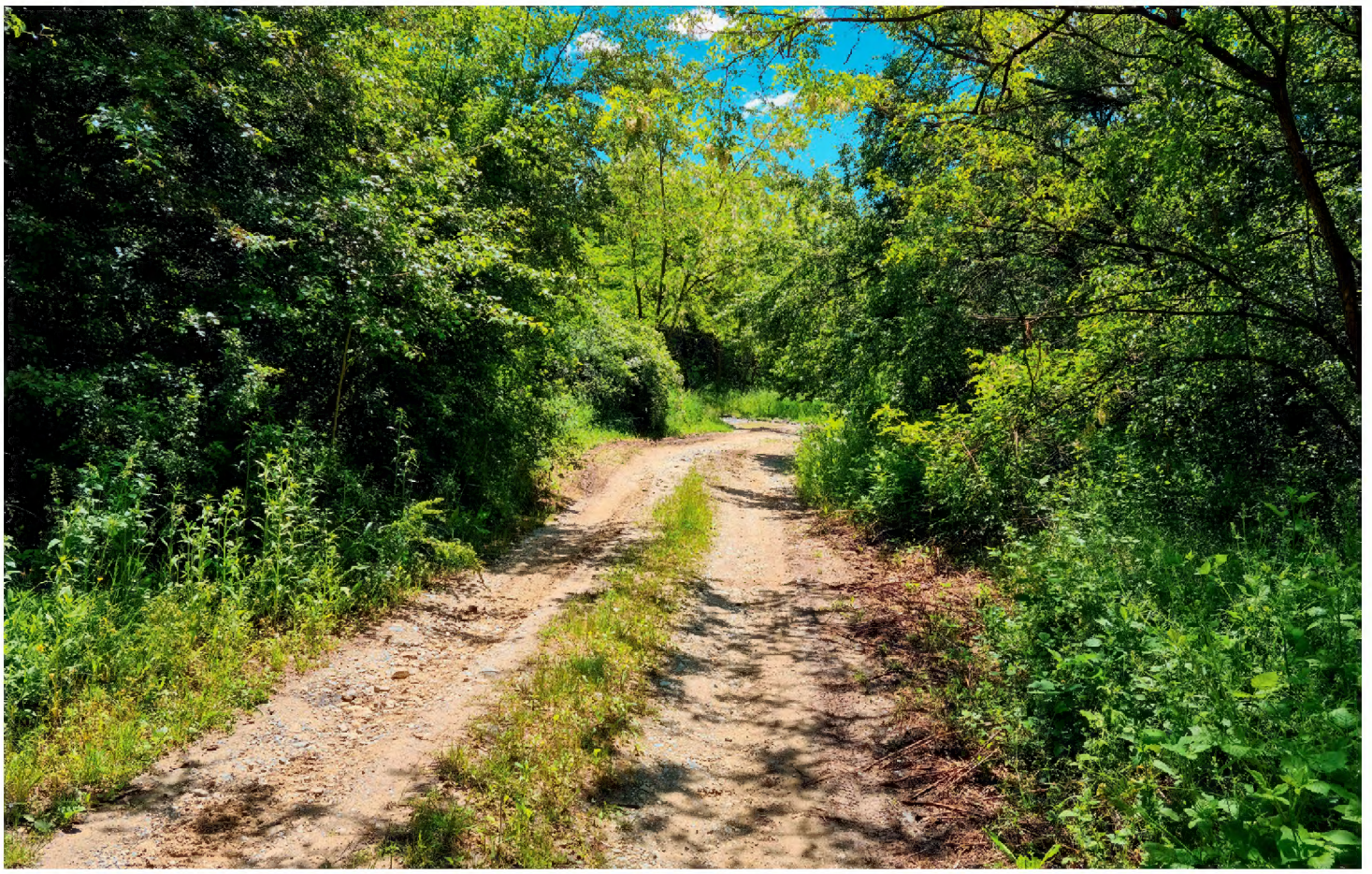

Figure 1. Natural habitat of *Euphydryas maturna* in Bungeţu Forest, Bălceşti, Vâlcea county. 29.V.2021.

Bungeţu Forest is a thermophile broadleaf forest in which Hungarian oak (*Quercus frainetto*), Turkey oak (*Q. cerris*) and Sessile oak (*Q. petraea*) are prevalent. Next to them, different other decidous trees and shrubs, like Common ash (*Fraxinus excelsior*), are found in large number. The canopy structure appears to be diverse, making it suitable for supporting a population of Scarce fritillary.

Occurring in clearings, forest fringes or along the open roads that cross the forest, where young common ash trees are growing in open, mixed woodlands or in nature-like fringe structures often with Common privet (*Ligustrum* sp.), the Scarce fritillary appears to be a typical hygrothermophilous species of (often damp) open woodlands and coppice. As mentioned before, it is a threatened species throughout its range. The massive destruction of (especially) riverside and lowland forests, the dense afforestation of clearings but also leaving the forest to grow and close the canopy, abandonment of coppice forests, the selective extraction of ash trees (van Swaay et al. 2012), drainage of forested damp areas and sinking ground water levels, insecticides used both in crops as well as in forests have triggered the extinction of many populations and weakened those that still survive. The potential feeding habitats (adjacent extensive meadows rich in nectar sources) are increasingly intensely farmed (heavy fertilization and mowing with equipment). Another recently identified threat seems to be the extensive use of crushed stones for preventing the deterioration of the roads from inside the forest. The use of large amounts of crushed stones to stop the road damages caused by the heavy forestry vehicles (or other similar equipment that travels through the forest) prevents the puddle formation, depriving males from

Figure 2. *Euphydryas maturna*, male. Bungeţu Forest, Bălceşti, Vâlcea county. 29.V.2021.

mud-puddling. Recent research has shown that the genetic structure of the local populations can also represent an additional vulnerability, with a deep impact on the stability and ultimately the very existence of species at the local level (Pecsenye et al. 2017). Finally, a further threat for the remaining populations of Scarce fritillary came from the so-called Ash dieback (*Hymenoscyphus fraxineus*, an Ascomycete fungus causing a chronic fungal disease of ash trees), which has largely spread in central Europa in recent years (Hultberg et al. 2020).

Aside from preserving the natural habitats suitable for this species, further efforts must be carried out for a better mapping and monitoring of the Scarce fritillary in Romania, including the use of the much more efficient method of surveying and monitoring the silk-woven nests in the second half of July and first decade of August (Dolek et al. 2018). These efforts should aim the increase of the number of known populations in order to fill the gaps in the known distribution of this species (Rákosy 2013), alongside with assessing their conservation status. Besides, studies should be undertaken to increase the knowledge on the biology of this species, in order to build effective conservation strategies. In this respect, setting a suitable conservation strategy, which must include a better management of coppicing (see Dolek et al. 2018) might turn out to be crucial for increasing the surviving chances of survival of Scarce fritillary's local populations in Romania local populations of the in Romania.

References

Fleck E (1900) Die Macrolepidopteren Rumäniens (I). Bulletin de la Société des Science de Bucarest 8(6): 682–773. [in German]

Franzenau J (1852) Lepidopterologische Mitteilungen. Verhandlungen und Mitteilungen des Siebenbürgischen Vereins für Naturwissenschaften zu Hermannstadt 3: 181–186. [in German]

Dolek M, Kőrösi Á, Freese-Hager A (2018) Successful maintenance of Lepidoptera by government-funded management of coppiced forests. Journal for Nature Conservation 43: 75–84.

Hultberg T, Sandström J, Felton A, Öhman K, Rönnberg J, Witzell J, Cleary M (2020) Ash dieback risks an extinction cascade. Biological Conservation, 244: 108516, 9 pp.

Konvička M, Čížek O, Filipová L, Fric Z, Beneš J, Křupka M, Zámečník J, Dočkalová Z (2005) For whom the bells toll: Demography of the last population of the butterfly *Euphydryas maturna* in the Czech Republic. Biologia 60(5): 551-557.

Kudrna O (2019) Distribution of Butterflies and Skippers in Europe (Lepidoptera: Rhopalocera, Grypocera). 24 Years Mapping European Butterflies (1995-2019). Final Report. Spolecnost pro Ochranu Motylu (SOM) / Mapping European Butterflies (MEB), 364 pp.

Leraut P (2016) Butterflies of Europe and neighbouring regions. N.A.P. Editions, Verrières-le-Buisson, 1116 pp.

Maes D, Wiemers M, Verovnik R, Warren M, Brosens D, Desmet P (2020) National checklists and red lists for European butterflies. Version 1.1. Research Institute for Nature and Forest (INBO). Checklist dataset https://doi.org/10.15468/ye7whj accessed via GBIF.org on 2021-06-03.

Mann J (1866) Aufzählung der im Jahre 1865 in der Dobrudscha gesammelten Schmetterlinge. Verhandlungen des kaiserlich-königlich zoologisch-botanischen Gesellschaft in Wien 16: 1–40. [in German]

Mihăilescu S, Strat D, Cristea I, Honciuc V (2015) Raportul sintetic privind starea de conservare a speciilor și habitatelor de interes comunitar din România. Ed. Dobrogea, Constanța, 280 pp. [in Romanian]

Pecsenye K, Tóth A, Bereczki J, Varga Z (2017) A possible genetic basis for vulnerability in Euphydryas maturna (Lepidoptera: Nymphalidae). Genetica 145: 151-161.

Rákosy L (2002) Lista roșie pentru fluturii diurni din România. Buletin de informare, Societatea Lepidopterologică Română, Cluj-Napoca, 13(1-4): 9-26. [in Romanian]

Rákosy L (2013) Fluturii din România. Cunoaștere, protecție, conservare. Editura Mega, Cluj-Napoca, 352 pp. [in Romanian]

Rákosy L, Goia M, Kovács K (2003) Catalogul lepidopterelor României / Verzeichnis der Schmetterlinge Rumäniens. Societatea Lepidopterologică Română, Cluj-Napoca, 446 pp. [in Romanian and German]

Rákosy L, Pecsenye K, Mihali C, Tóth A, Varga Z (2012) Taxonomic review of *Euphydryas maturna* (Linnaeus, 1758) (Lepidoptera, Nymphalidae) with description of a new subspecies from Dobrogea (Romania) and notes on conservation biology. Acta Zoologica Academiae Scientiarum Hungaricae 58(2): 145–161.

Salay F (1910) Katalog der Makrolepidopteren Rumäniens. Bulletin de la Société des Sciences de Bucarest-Roumanie 19(1–2): 74–206. [in German]

Székely L (2008) The Butterflies of Romania / Fluturii de zi din România. C2 Design, Braşov, 305 pp. [in Romanian and English]

Streltzov AN (2016) Nadsemeystvo Papilionoidea. In: Leley AS (Ed.) Annotirovannyy katalog nasekomykh Dal'nego Vostoka Rossii. Tom II Cheshuyekrylyye. Dalnauka, Vladivostok, pp. 224–265. [in Russian]

van Swaay C, Collins S, Dušej G, Maes D, Munguira M, Rákosy L, Ryrholm N, Šašić M, Settele J, Thomas J, Verovnik R, Verstrael T, Warren M, Wiemers M, Wynhoff I (2012) Dos and Don'ts for butterflies of the Habitats Directive of the European Union. Nature Conservation 1: 73–153.

van Swaay C, Cuttelod A, Collins S, Maes D, López Munguira ML, Šašić M, Settele J, Verovnik R, Verstrael T, Warren M, Wiemers M, Wynhoff I (2010) European Red List of Butterflies. Publications Office of the European Union, Luxembourg, 47 pp.

van Swaay C, Warren M (1999) Red Data Book of European Butterflies (Rhopalocera). Nature and Environment 99. Council of Europe Publishing, Strasbourg, France, 260 pp.

van Swaay C, Warren MS (2006) Prime Butterfly Areas of Europe: an initial selection of priority sites for conservation. Journal of Insect Conservation 10: 5–11.

Wahlberg N (2001) On the status of the scarce fritillary *Euphydryas maturna* (Lepidoptera: Nymphalidae) in Finland. Entomologica Fennica 12: 244–250.